UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

GE LIGHTING SOLUTIONS, LLC,	)	
	)	
Plaintiff,	)	**Case Nos. 1:12-cv-3131**
	)	**1:12-cv-3132**
vs.	)	**1:12-cv-3134**
	)	**1:12-cv-3136**
LIGHTS OF AMERICA, INC (3131)	)	
	)	
LIGHTING SCIENCE GROUP CORPORATION (3132)	)	**MEMORANDUM OF OPINION AND ORDER**
	)	
FEIT ELECTRIC COMPANY, INC (3134)	)	
	)	
MSI, LLC (3136)	)	
Defendants.		

****THIS DOCUMENT APPLIES TO ALL OF THE ABOVE-CAPTIONED CASES****

GE Lighting Solutions, LLC, ("GE") filed suit against Lights of America, Inc. ("LOA"), Lighting Science Group Corp. ("LSG"), Feit Electric Company, Inc. ("Feit"), and MSI, LLC ("MSI") (collectively, "Defendants") for infringing two of its patents, U.S. Patent No. 6,799, 864 ("the '864 Patent") and U.S. Patent No. 6,787,999 ("the '999 Patent") (together, "the Patents"). This matter is before the Court to construe certain disputed claim terms and to address the Defendants' argument that two of the disputed claim terms are indefinite.

I. Background

The two patents asserted by GE in this litigation involve light-emitting diode ("LED") lighting technology. LEDs are significantly more efficient than conventional bulbs, such as incandescent, fluorescent and halogen bulbs, because they emit more light per watt of power input. However, adapting LED technology to lighting applications poses challenges. LEDs

generate a substantial amount of heat, which must be dissipated in a different way than heat is dissipated in conventional bulbs. At the same time, LEDs must fit into preexisting form factors that are used for conventional bulbs, such as a traditional "A-line," parabolic ("PAR"), or multifaceted reflector ("MR") form.

According to GE, it developed LED technology with innovative heat sinking concepts to provide a solution for the problem of excess heat in lighting applications. The inventions of the '864 patent include a number of features, such as: 1) an LED assembly; 2) a spreader for initially distributing heat laterally; 3) a thermally conductive core; and 4) a number of heat dissipating members disposed around the thermally conductive core. Around the same time GE developed the technology leading to the '864 Patent, it also conceived of how to fit LED lamps in pre-existing form factors. This technology is embodied in the '999 Patent. The '999 Patent includes the following: 1) an LED module; 2) an electronics module for powering the LED module; and 3) a heat sink that heat sinks both the LED module and the electronics module.

On December 28, 2012, GE initiated six separate actions against six different companies in the Northern District of Ohio, alleging infringement of both the '864 Patent and the '999 Patent. One case was assigned to Judge John Adams, and the other cases were either initially assigned or subsequently transferred to me, one of which settled. In December of 2013, the parties in Judge Adams' case, as well as the parties in the four cases that are before me, filed briefs setting forth disputes as to the construction of certain claim terms in the Patents.

On February 19, 2014, Judge Adams held a Claim Construction Hearing and, on August 29, 2014, he issued an order construing all of the disputed terms in GE's favor. *See GE Lighting Solutions, LLC v. Technical Consumer Products, Inc.*, Case No. 5:12-cv-3127 ("Judge Adams' Case" or "TCP Case"), ECF No. 77 ("Judge Adams' Claim Construction Order"). Following

Judge Adams' Claim Construction Order, the Defendants in my four cases requested an opportunity to submit papers commenting on Judge Adams' Order. (Minutes of Proceeding, dated 9/9/2014). Defendant LSG, in addition to commenting on Judge Adams' Order, filed a Motion for Summary Judgment of Invalidity for Indefiniteness as to two of the disputed terms ("Motion for Summary Judgment") – "heat sink" (verb) and "elongated" (Case No. 12-cv-3132, ECF No. 46), and LOA, FEIT and MSI (together, "Joint Defendants") joined the Motion.[1] On April 17, 2015, the Court held a combined Claim Construction and Indefiniteness Hearing in the four cases that are pending before me, during which each side presented expert testimony on indefiniteness ("April 17 Hearing"). Following the hearing, the parties filed post-hearing briefs on indefiniteness and claim construction.

Accordingly, the parties' claim construction arguments and Defendants' Motion for Summary Judgment are ripe for adjudication.

II. Law

1. Claim Construction

Claim construction is purely a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Claim construction begins with the intrinsic evidence – the claims, specification, and prosecution history – because it is "the most significant source of the legally operative meaning of the disputed claim language." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312

[1] While the Joint Defendants have not filed Notices of Joinder to LSG's Motion for Summary Judgment, they have participated in the proceedings relating to this motion, and have offered to file Notices of Joinder. (Defendants'Post-Hearing Indefiniteness Reply Brief, Case No. 12-cv-3131, ECF No. 69 at p. 3 n. 2). Thus, the Court considers these Defendants to have joined LSG's Motion for Summary Judgment.

(Fed. Cir. 2005), *cert denied*, 546 U.S. 1170 (2006) (citations and internal quotation marks omitted). "Because the patentee is required to define precisely what his invention is, … it is unjust to the public, as well as an evasion of the law, to construe it in a matter different from the plain import of its terms." *Id.* (internal quotation marks and citation omitted). Thus, claim construction begins with the language of the claims. *Id.* A claim term is generally given its "ordinary and customary meaning," which is the meaning that the term would have to a person of ordinary skill in the art at the time of the invention. *Id.* at 1313. The context of a claim term, including the "surrounding words of the claim[,] also must be considered in determining the ordinary and customary meaning of those terms." *Brookhill- Wilk 1 v. Intuitive Surgical, Inc.*, 326 F.3d 1215, 1220 (Fed. Cir. 2003) (citation omitted).

That said, claims cannot be read in a vacuum. They must be construed in view of the specification, of which they are a part. *Phillips*, 415 F.3d at 1315 (citations omitted). Apart from the claim language itself, the patent specification is the "single best guide to the meaning of a disputed term." *Id.* at 1318. In addition to the specification, "the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be." *Id.*

Courts are also permitted to consider "extrinsic evidence, which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Id.* "However, while extrinsic evidence can shed useful light on the relevant art … it is less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id.* at 1315.

2. Indefiniteness

The Patent Act, 35 U.S.C. § 112 (b), requires the specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention." This is referred to as the "definiteness requirement," and it involves a "delicate balance." *Nautilus Inc. v. Biosig Instruments, Inc.*, __ U.S. __, 134 S.Ct. 2120, 2128 (2014). On the one hand, "[s]ome modicum of uncertainty… is the price of ensuring the appropriate incentives for innovation." *Id.* at 2128 (internal quotation marks and citation omitted). On the other hand, "a patent must be precise enough to afford clear notice of what is claimed" in order to inform "the public of what is still open to them." *Id.*

Recently, in *Nautilus Inc. v. Biosig Instruments,* the Supreme Court formulated a new standard for the definiteness requirement. The Supreme Court interpreted Section 112(b) "to require that a patent's claims, viewed in light of the specification delineating the patent, and the prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty." *Id.* at 2129. Before *Nautilus,* a patent's claim satisfied the definiteness requirement if it was "amenable to construction, and the claim, as construed, was not 'insolubly ambiguous." *Id.* at 2130 (internal quotation marks and citation omitted). However, in *Nautilus,* the Supreme Court explained that this formulation lacked the precision that the definiteness requirement demands. *Id.* Thus, post-*Nautilus*, a district court must undertake the following analysis:

> First, the court should attempt to construe a claim. If the claim is not amenable to construction, then the claim is indefinite. A claim that is not amenable to construction cannot inform a person of ordinary skill of the scope of the invention with reasonable certainty. *Cf. Nautilus,* 134 S.Ct. at 2130 ("It cannot be sufficient that a court can ascribe *some* meaning to a patent's claims."). Second, the court must ask whether a person of ordinary skill, after reading the specification and prosecution history, would be reasonably certain of the correct scope of the claim. A claim would fail this

> standard if a person of ordinary skill would not be reasonably certain of the correct construction of a term. *California Inst. of Tech. v. Hughes Commc' ns. Inc.*, 35 F. Supp. 3d 1176, 1181-82 (C.D. Cal. 2014).

Like claim construction, indefiniteness is a question of law. *Takeda Pharm. Co. v. Zydus Pharm. USA, Inc.*, 743 F.3d 1359, 1366 (Fed.Cir.2014) (citation omitted). At the same time, "[a]ny fact critical to a holding on indefiniteness … must be proven by the challenger by clear and convincing evidence." *Intel Corp. v. VIA Techs.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003).

As an initial matter, GE argues that summary judgment is not appropriate at this stage of the litigation because "there are multiple material facts in dispute." (Response to Defendants' Objections to Defendants' Post-Hearing Indefiniteness Brief, Case No. 12-cv-3131, ECF No. 64 ("GE' Post-Hearing Indefiniteness Brief"), 4-5). However, as Defendants note, GE points to facts that are either not in dispute, irrelevant or are legal issues for the Court to decide. (Defendants' Post-Hearing Indefiniteness Reply Brief, Case No. 12-cv-3131, ECF No. 66, ("Defendants' Indefiniteness Reply Brief"), 8-9). For instance, whether the prosecution history of the'864 Patent supports Defendants' argument that "elongated" is indefinite, and whether one of ordinary skill in the art would understand that the requirement that the core must fit into MR-style and PAR-style fixtures provides a boundary for "elongated," are questions of law for the Court to decide.[2] *See Exxon Research & Eng'g Co. v. United States*, 265 F. 3d 1371 (Fed. Cir. 2001) ("We adhere to the principle that determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims.… We therefore reject [plaintiff's] argument that the issue of indefiniteness turns on an underlying factual dispute that should not have been resolved as a matter of law on summary judgment." (internal quotations marks and citations omitted)); *see also Thought, Inv. v. Oracle*

[2] Similarly, whether the prosecution history of the '864 Patent is relevant to the definiteness of the '999 Patent, and whether one skilled in the art would understand the '999 Patent's use of the term "to heat sink" are questions of law for the Court to resolve.

Corp., 2014 WL 5408179, * 9, n. 7 ("[B]ecause claim indefiniteness is a question of law, and one on which the court may refer to expert extrinsic evidence, the court can and must resolve factual disputes." (citation omitted)).

III. Analysis

A.) Judge Adams' Order

The parties in my cases dispute the same claim terms that were disputed by the parties in the TCP Case. With respect to the '864 Patent, the claim terms that are in dispute are: "core," "elongated," "spreader," "surrounding," "conduit," "reflector wells," "shaped recess," "path," "selectively," and "heat sink" (noun). As for the '999 Patent, the claim terms that are in dispute are: "heat sink" (noun and verb), "conduit," and "second side." [3]

During the April 17 Hearing, each side presented expert testimony on indefiniteness for the terms "elongated" and "to heat sink." As for claim construction, the Court asked Defendants whether they were still asserting that Judge Adams incorrectly construed all of the disputed claim terms. (Transcript of Claim Construction and Indefiniteness Hearing, Case No. 13-cv-3131, ECF No. 60, ("Hrg. Tr."), at 3:7-17). In response, counsel for LSG, on behalf of the Defendants, stated that while the Defendants were not waiving any of their claim construction arguments, they were going to address two specific terms (conduit and elongated) where they felt "the errors in the construction [were] so clear that this Could should hear them and understand them." (Hrg. Tr. at 4:22-25). Similarly, in their brief objecting to Judge Adams' Claim Construction Order, Defendants only address the claim terms "elongated," "conduit," and "to heat sink." Defendants' Objections to Judge Adams' Markman Order, Case No. 12-cv-3131, ECF No. 62 ("Defs. Obj. to

[3] Defendant LSG is not disputing all of these claim terms. It only disputes the following claim terms: "core," "elongated," "spreader," "surrounding," "conduit" and "heat sink" (verb).

Judge Adams' Order"), at 1). As for the other disputed claim terms, Defendants refer the Court to their claim construction briefs, which they filed before Judge Adams' issued his Order in the TCP Case.

This Court has ruled that where a patent's claim terms have already been construed, the prior claim construction order should be given "deferential treatment unless clearly erroneous." *Parker–Hannifin Corp. v. Baldwin Filters, Inc.*, 724 F.Supp.2d 810, 815–16 (N.D. Ohio 2010); *see also Finisar Corp. v. DirectTV Group, Inc.*, 523 F.3d 1323 (Fed. Cir. 2008) ("Given the importance of uniformity in the treatment of a given patent,… this court would be remiss to overlook another district court's construction of the same claim terms in the same patent …"). Having reviewed and considered all of the parties' briefing on claim construction, I agree with Judge Adams' Order as to the following claim terms for the '864 Patent: core, spreader, surrounding, reflector wells, shaped recess, path, selectively, and heat sink (noun). In addition, I agree with Judge Adams' Order as to the following claim terms for '999 Patent: second side and heat sink (noun). Accordingly, I adopt Judge Adams' claim constructions as to these terms without further comment, and limit my analysis to the claim terms for which Defendants contend that Judge Adams' adoption of GE's proposed claim construction was clearly erroneous: "conduit," "elongated," and "to heat sink."

B.) Conduit

The parties dispute the construction of the term "conduit" in both the '864 Patent and the '999 Patent. GE proposes that the Court construe "conduit" to mean "a passageway," while Defendants propose that the Court construe this term to mean "pipe or tube for protecting electric wires or cables." Judge Adams, in reaching his conclusion that "conduit" should be construed to mean "a passageway," disagreed with TCP's argument that the prosecution history required

"conduit" to provide a structural limitation.[4] Defendants disagree with Judge Adams' reading of the prosecution history, arguing that GE's statements during prosecution of the '864 Patent indicate that a "conduit" must be construed to include a structural limitation. Defendants contend that their proposed construction – "pipe or tube for protecting electric wires or cables" – includes the structure necessitated by the prosecution history.

During the prosecution of the '864 patent, the Patent Trademark Office ("PTO") sent GE two Office Actions. In the second Office Action, the PTO rejected, among other claims, claim 11 (which became patent claim 8, hereinafter "claim 8")) as patentable over prior art Reisenauer in view of prior art Jennings. (Office Action, mailed 2/4/2003, Case No. 12-cv-3131, Doc. # 34-11 ("Second Office Action"), at 7). The PTO conceded that Reisenauer "does not teach a thermally conductive core and thermally conductive conductors being accommodated in a fixture selected from the set consisting of MR-style fixtures and PAR-style fixtures." *Id.* However, the PTO then stated that "[i]t has been held that a recitation with respect to the manner in which a claim apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitation." Thus, the PTO determined that the "MR-style fixtures and PAR-style fixtures" limitation did not overcome prior art because it was a functional limitation, as opposed to a structural limitation.

As a result, GE amended claim 8 to add a structural limitation not present in the prior art: "the thermally conductive core has an electrical conduit." *See* '864 Patent at 6:29. Defendants contend that because "core" was already present in the claim before GE amended it to include an "electrical conduit," "conduit" must add a further structural limitation. Defendants argue that "a

[4] Judge Adams concluded that "[a] careful reading of claim 8 (amended claim 11) shows that the structural limitation refers to the structure of the core, not to a specific structure." (Judge Adams' Claim Construction Order, at 8).

passageway" is a "void" and therefore does not add any further structural limitation. (Defs. Obj. to Judge Adams' Order" at 6). The Court disagrees.

The features of a claimed apparatus maybe recited either structurally or functionally. *In re Schreiber,* 128 F. 3d 1473, 1478 (Fed. Cir. 1997). Structural limitations describe a feature of a claimed apparatus by "what it is," whereas functional limitations describe a feature of a claimed apparatus by "what it does." *Id*. The Court finds that GE's amendment to claim 8 recites a structural limitation; a core that has a passageway through which electricity passes.

Furthermore, the claims and specification supports construing "conduit" to mean "a passageway," and, for claim construction purposes, this evidence is more useful than the prosecution history. *Phillips,* 415 F.3d at 1317 ("[B]ecause the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes."). The specification of the '864 Patent states that "[e]lectrical conductors 68, 70 *pass through* the core 62 and the heat spreader 60 to supply power received by pins 72, 74 to the LEDs 10, 12, 14." ('864 Patent at 3:43-45) (emphasis). The specification of the '999 Patent uses conduit in the same manner; the specification explains that the optics module includes electrical leads that are arranged in the electrical conduit "*passing* through the heat sink 22." ('999 Patent, at 6: 17-20) (emphasis added).

Accordingly, the Court construes "conduit" to mean "a passageway."

C.) Elongated

1. Claim Construction

The parties dispute the construction of the term "elongated" in the '864 Patent. GE argues that the intrinsic evidence supports construing "elongated" to mean "extending in length."

Defendants, on the other hand, argue that "elongated" is indefinite and no construction can be supported by the intrinsic record. (Defs. Obj. to Judge Adams' Order at 4). At the same time, Defendants, "[i]n an effort at claim construction," propose that the Court construe elongated to mean "greater in length than width." (Defs. Obj. to Judge Adams' Order at 5, n.1).

According to GE, the inventors of the '864 Patent were trying "to solve the problems associated with the heat generated by LEDs… in a universal way for a variety of form factors for common light bulb formats." (GE's Opening Claim Construction Brief, Case No. 12-cv-3131, ECF No. 37 ("GE's Opening CC Brief"), at 13). GE argues that its construction of elongated– "extending in length"– "comports with the solution that it came up with, as it reflects that in order to facilitate dissipating heat from the core, the core extends in length… in a direction away from the LED to allow the heat to flow through the core and finally out to the appendages that surround the core." (GE's Opening CC Brief at 13).

First, the Court considers the language of the claims. The term elongated appears in claims 1, 8, 14 and 15:

> **Claim 1:** A light module, comprising…*a thermally elongated core having a first end in thermal communication with the conductive spreader, the thermally conductive core being elongated in a direction transverse to the generally planar front side light emitting diode array* to define a second end distal from the conductive spreader…" ('864 Patent at 5:58-63) (emphasis added).
>
> **Claim 8:** The light module as set forth in claim 1, wherein the thermally conductive core has an electrical conduit passing from the first end to the second end to provide electrical access to the front side light emitting diode array from the *second end of the thermally conductive elongated core*, and a physical size and shape of an *exterior of the thermally conductive core* and the electrical conductor are designed to be accommodated in a fixture selected from a group consisting of MR-style fixtures and PAR-style fixtures. ('864 Patent at 6:28:38) (emphasis added).
>
> **Claim 14:** …a thermally conductive elongated core in thermal communication with the light emitting face…. ('864 Patent at 6:59-63).

> **Claim 15: ….***an elongated thermally conductive core having a lateral area less than the lateral area of the rearward facing side* and connecting with a central area of the thermally conductive base, the *elongated thermally conductive core extending from the thermally conductive base* in a direction away from the LED assembly… ('865 Patent at 7: 16-20) (emphasis added).

GE argues that the claim language compels defining "elongated" to mean "extending in length." In its Opening Claim Construction Brief, GE argued that the claim language "makes clear that 'elongated' refers to an extension along a single dimension (length) without any restrictions on width." (GE's Opening CC Brief at 12-13). In support, GE pointed to claim language describing the core as "being elongated in a direction transverse to the generally planar front side light emitting diode array" and "extend[ing] from the thermally conductive base in a direction away from the LED assembly." *Id.* GE concluded that this language supports its definition because it "uses the term elongated in a one-dimensional context, i.e., '"extending in length."' *Id.*

In its brief responding to Defendants' objections to Judge Adams' Order, however, GE sets forth a different argument. (Response to Defendants' Objections to Judge Adams' Markman Order, Case No. 12-cv-3131, ECF No. 63 ("Response to Obj. to Judge Adams' Order"), 5). There, GE indicates that its proposed construction requires a further understanding of the *directionality* of the core. GE states that '"elongated' is a "term that defines direction (*i.e.,* the direction in which the core extends)," and it is used in the '864 Patent to specify one type of direction, the "length direction." *Id.* GE argues that the cores are "elongated" not because they have length, but, rather, because the *direction* in which they extend is lengthwise. In addition, for the first time, GE makes arguments about the "axis" of the core and LED assembly:

> The claim language, by reciting an "elongated core," positions the length axis of the core in relation to the lamp as a whole; while the recitation of a core

> "elongated in a direction transverse" further positions that length axis as "transverse" to the front side LED array.
> ……..
>
> Elongated also requires that the "first end" and the "second end" be along the length axis of the core, rather than the width axis or some other axis. [citing Claim 1] ("a thermally conductive core having a first end" and "being elongated in a direction transverse to the generally planar front side light emitting diode array to define a second end"). (Response to Obj. to Judge Adams' Order at 6).

GE insists that it "has consistently taken this position, and discussed this exact issue at the *Markman* hearing in front of Judge Adams." (Response to Obj. to Judge Adams' Order at 6 n. 4). In support, GE cites to specific pages from the *Markman* hearing transcript in Judge Adams' Case. The Court has examined the whole transcript, including the specific pages to which GE cites, and nowhere does GE discuss the length axis of the core in relation to the axis of other elements. Furthermore, other than its brief responding to Defendants' objections to Judge Adams' Claim Construction Order, GE has never made this argument in any of the claim construction or indefiniteness briefs that it has filed in my cases. *See e.g.*, GE's Response Claim Construction Brief, Case No. 12-cv-3131, ECF No. 40 at 4 ("Claim 1 merely requires that an 'elongated' core extends in a single dimension: length."); GE's Opposition to LSG's Motion for Summary Judgment, Case No. 12-cv-3132, ECF No. 48 ("GE's Opp. to Defs.' Motion for Summary Judgment"), at 13 (arguing that one of the "objective boundaries" of the core is that it "extends in length from one end to the other"). Nor did counsel make this argument at the April 17 Hearing.

Based on GE's most recent arguments, it appears that GE is suggesting that the Court should construe "elongated" with respect to the core's length axis relative to the LED assembly

and the "lamp as a whole." But this is not the definition that GE has proposed. GE's proposed definition is "extends in length."

The Court finds support in the claim language for construing elongated to mean "extending in length." As Judge Adams' noted, the claim language uses the term elongated with respect to only a single dimension (length), without any restrictions on width. (Judge Adams' Order at 6.). Claim 1, for instance, states that the core is "elongated in a direction transverse to the generally planar front side light emitting diode array."

Defendants concede that their proposed definition –greater in length that width –does "not come from the patent itself." (Hrg. Tr. at 9). Instead, Defendants rely on dictionary definitions that define "elongated" as greater in length than width. (Joint Defendants' Opening Claim Construction Brief, Case No. 12-cv-3131, ECF No. 35 at 11-12). While the Court acknowledges that these definitions support Defendants' proposed construction, the Federal Circuit has cautioned against relying on extrinsic evidence that is inconsistent with the intrinsic evidence. *Phillips,* 415 F. 3d at 132 1 ("…[H]eavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is in the specification."). Here, as Defendants admit, there is nothing in the intrinsic evidence that supports Defendants' proposed construction. Thus, the Court finds that it would be improper to rely on dictionary definitions.

As for the specification and prosecution history, the Court, finds, as discussed in further detail below, that they fail to shed light on the meaning of "elongated." Accordingly, the only support for either side's construction is the claim language, which supports GE's proposed construction – extending in length. However, this does not end the Court's inquiry. The Court

must also consider whether this construction satisfies the definiteness requirement. *California Inst. of Tech.*, 35 F.Supp.3d at 1181-82 (C.D. Cal. 2014); *see also Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 251 (Fed. Cir. 2008) ("The fact that [the patent holder] can articulate a definition supported by the specification…does not end the inquiry. Even if a claim term's definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope.").

2. Indefiniteness

As noted above, the definiteness requirement is satisfied when a "patent's claims, viewed in light of the specification delineating the patent, and the prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus*, 134 S.Ct. 2120 at 2128. Interpreting and applying *Nautilus*, the Federal Circuit has ruled that "[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citations omitted).

"[I]n the face of an allegation of indefiniteness, general principles of claim construction apply." *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed.Cir.2010) (internal quotation marks and citation omitted). "In that regard, claim construction involves consideration of primarily the intrinsic evidence, *viz.*, the claim language, the specification, and the prosecution history." *Id.*

First, the Court considers the claim language. GE's expert, Dr. Feke, states in his expert report that one of ordinary skill in the art would understand the scope of an "elongated core" as follows: 1) the core must have a first end and a second end, (2) the core extends in length from the first end to the second end, (3) the core extends in length in a direction transverse to the light

emitting diode array, (4) the second end of the core is distal from the conductive spreader, (5) the core is surrounded by appendages, and (7) the appendages are in thermal communication with the conductive spreader. (Case No. 12-cv-3131, ECF No. 56 ("Feke Expert Report"), at ¶ 53).

The problem with looking to these characteristics to determine the scope of "elongated" is that they describe the core, not the term "elongated." That is, whether a core is thermally conductive, or is surrounded by fins, or has two ends, sheds no light on the meaning of "elongated." Furthermore, Dr. Feke's statement that the core "extends in length" provides no objective boundaries for this term. This is because everything "extends in length" to some degree. In order for the core to have a "first end" and a "second end," be in a "direction transverse to the LEDs," and "extend [ ] from the thermally conductive base in a direction away from the LEDs," the core must, at least to some degree, "extend in length." Thus, as Dr. Feke testified during the April 17 Hearing, both elongated and non-elongated cores "extend in length":

> Defense Counsel: Now, it's true, isn't it, that a non-elongated core, something that's not elongated, in the context of the '864 patent also extends in length.
>
> Dr. Feke: Objects can have length, that's correct.
>
> ……
>
> Defense Counsel: ….My question is, just the words "elongated" and "non-elongated," if you describe "elongated" as "extending in length" and you also describe "non-elongated" as extending in length," how can you differentiate those two words based on that description?
>
> Dr. Feke: That would not be a complete description, you could not differentiate.
> (Hrg. Tr. at 86: 11-17, 87:1-6).

According to Dr. Feke, describing "elongated" to mean "extending in length" is not a complete description because it does not account for the fact that the core must be "long enough":

> Dr. Feke …. So [the core] is part of the design, it has to be long enough so there is good overall heat transfer.
>
> Court: So you would say that "elongated," a better definition would be long enough to do what the invention says it's going to do, which is to have the fins and be in a direction distal, and dissipate the heat.
>
> Dr. Feke: And transverse. I think that's important.
>
> Court: I'm sorry. Transverse, in a direction transverse, have the fins, and dissipate the heat.
>
> Dr. Feke: That's right.
>
> Court: So "elongated" really means "long enough." Is that a fair way to put it?
>
> Dr. Feke: I think that's a good way of putting it.
> (Hrg. Tr. at 109:16-25, 110:1-4).

GE, in its brief opposing Defendants' Motion for Summary Judgment, also suggests that "elongated" really means "long enough." There, GE argues that the core must "extend in length[] *enough* to … pull heat further from the lamp electronics." (GE's Opp. to Defs.' Motion for Summary Judgment at 14). However, GE's proposed definition is not "long enough" or "extending in length enough," and, as noted above, GE's own expert testified that "extending in length" does not include the notion that the core has to be "long enough." (April 17 Hrg. Tr. at 89).

Dr. Feke also opines that claim 8 of the '864 Patent places boundaries on the scope of the elongated core by indicating that the elongated core must fit in MR- or PAR-style fixtures. (Feke Expert Report, at ¶ 36). However, Defendants' expert, Dr. Ortega, testified that while the MR-and PAR-style requirements specify that an entire LED lamp assembly must fit within certain form factors, these form factors do not help one of ordinary skill in the art determine the scope of any particular element of a lamp, including "elongated." (Hrg. Tr. at 49:17-25). This is because *all* of the components of a lamp assembly, which all vary in size, must fit within that particular form factor. *Id.*

Next, the Court considers the specification. The Patent Act requires that the specification describe "the manner and process of making and using" the patented invention. Patent Act, 35 U.S.C. § 112 (a). The specification of the '864 Patent does not mention the term "elongated." Nonetheless, GE argues that the specification supports construing "elongated" to mean "extending in length," and it argues that the specification provides guidance as to the scope of the term "elongated." (GE's Opening CC Brief at 11; GE's Opp. to Defs.' Motion for Summary Judgment at 14).

As noted above, the inventors of the '864 Patent were trying to solve the problems associated with the heat generated by LEDs in a universal way for form factors that are used for conventional bulbs, such as MR-or PAR –type forms. GE argues that its construction of elongated comports with the novel solution to those problems, as it reflects that in order to facilitate dissipating heat from the core, the core extends in length away from the LEDs to allow the heat to flow through the core and out to the appendages that surround the core. In support, GE points to particular provisions from the '864 Patent specification that explain some of the problems with LEDs, as well as how its invention addresses these problems. However, while the

specification discusses the advantages of the '864 patent, the term "elongated" is not mentioned anywhere in the specification.

In Dr. Ortega's expert report, he opines that the specification provides no guidance as to the scope of "elongated" because it does not describe or mention this term. Case No. 12-cv-3131, ECF No. 56 ("Ortega Expert Report"), at ¶ 36). While Dr. Feke concedes that the specification does not describe or mention the length of the "elongated" core (Hrg. Tr., 88:19-25, 89:1-5), he maintains that it provides "guidance and reasonable certainty as to the claimed scope of the invention," (Feke Expert Report at ¶ 37). According to Dr. Feke, this is because the specification discloses that one of the advantages of the '864 Patent is that it can be used in MR- or PAR-style fixtures. (Feke Expert Report, at ¶ 37) (noting that the patent specification discloses that the '864 Patent " reduces the thermal resistivity of LED-based spot modules in MR-or PAR-type lamps.." and that it "makes possible the use of high powered LEDs within spot modules in MR- or PAR-type lamps or other novel lamp configurations"). The Court disagrees.

As discussed above, the requirement that the core must fit into MR-style and PAR-style fixtures does not indicate the boundaries of the "elongated" limitation. Rather, this is a boundary on the entire lamp which includes multiple other elements. (Hrg. Tr., 49:17-25). Thus, the specification does not shed light on the meaning of "elongated," nor does it provide any guidance as to the scope of "elongated."

Finally, the Court turns to the prosecution history. The prosecution history further illustrates the difficulty in determining the scope of "elongated." In the first Office Action that the PTO sent GE, the PTO rejected, among other claims, claim 1 of the '864 patent application as anticipated by prior art Reisenauer. (Office Action, mailed 2/4/2003, Case No. 12-cv-3131, ECF No. 34-11("First Office Action"), at 3-4). Specifically, the PTO noted that Reisenaur

discloses, among other things, a light module comprising of "a thermally conductive core." In response, GE amended claim 1 to add the term "elongated," and stated, in part:

> Nowhere does Reisenaur disclose or suggest multiple appendages disposed around an elongated core. Advantageously**,** Applicants [sic] design pulls heat further from the lamp electronics and provides a more effective heat dissipation mechanism. (Amendment and Remarks, dated 6/4/03, Case No. 12-cv- 3131, ECF No. 34-6 ("First Amendment and Remarks"), at 11).

In the second Office Action, the PTO rejected, among other claims, claim 3 of the '864 Patent as anticipated by prior art Serizewa and claim 1 as obvious over Reisenaur in view of prior art Jennings. (Second Office Action, at 3, 5). For instance, the PTO stated that Reisenauer discloses a light module comprising of a "thermally conductive elongated core." GE disagreed, and argued that both Serizawa and Reisenaur did not disclose an elongated core:

> Serizawa's shows a disc or plate shaped heat sink which is very similar to that of Reisenaur. **There is nothing in Serizawa's plate shaped heat sink 153 that could be described as "elongated"** or that would serve to pull heat away from the LED assembly as does the elongated core of the present application's heat sink. (Amendment and Remarks, dated 3/22/04, Case No. 12-cv-3131, ECF No. ("Second Amendment and Remarks"), at 8) (emphasis added).

> Reisenauer does not disclose or suggest an elongated thermally conductive core as is called for in claim 1. Element 28 of Reisenauer is identified in the Office Action at page 5 as "a thermally conductive elongated core." This element is illustrated in Reisenauer F.4: it is clearly disked shaped, and could probably be described as "generally planar." **Applicants find no aspect of element 28 which could conceivably be called "elongated."** (Second Amendment and Remarks at 10) (emphasis added).

To support its proposed construction, GE makes the same argument with regard to the prosecution history that it does with the specification. GE cites the prosecution history to argue that its construction of "elongated" comports with the solution that the inventors of the '864 Patent came up with to address the problems associated with the heat generated by the LEDs.

For instance, GE notes that its design "pulls heat further from the lamp electronics and provides a more effective heat dissipation mechanism." (GE's Opening CC Brief at 13).

Defendants, on the other hand, contend that the prosecution history demonstrates that "elongated" is indefinite. The Court agrees. During the April 17 Hearing, Dr. Feke testified that "elongated" was added to help one of ordinary skill in the art distinguish the '864 Patent claims from the prior art. (Hrg. Tr. at 89:5-9; 89:5-9). However, as Defendants point out, when GE added "elongated" to distinguish the '864 Patent claim from the prior art, GE did not point to any description or support in the patent specification or explain the scope of "elongated." Instead, GE distinguished its claims from the prior art by explaining that its design pulls heat away from the LED assembly. (First Amendment and Remarks at 11). This, however, describes the core, and not the definition of the specific "elongated" limitation that GE included.

Furthermore, as Defendants point out, during prosecution, GE stated that the prior art references did not disclose an elongated core. (Second Amendment and Remarks at 8, 10). However, because the prior art cores must, at least to some degree, "extend in length," they are elongated. (Ortega Expert Report at ¶ 50). Thus, based on GE's conflicting statements, the prosecution history does not help one of ordinary skill in the art determine to any reasonable certainty the scope or meaning of the term "elongated."

GE contends that Defendants misconstrue the prosecution history because during prosecution GE distinguished Reisenauer on the basis that Reisenauer discloses a spreader, not a core. (Response to Obj. to Judge Adams' Order at 10). However, when the PTO rejected claim 1 as obvious over Reisenauer because it discloses a "thermally conductive elongated core," GE did not respond by stating that Riesenauer does not disclose a core. Rather, GE distinguished Reisenauer based on the shape of its core; GE stated that what the PTO referred to as a

"thermally conductive core" was "generally planar," not elongated. (Second Amendment and Remarks at 10).

Accordingly, after reviewing the claim language, specification, prosecution history and expert testimony, the Court finds that the term "elongated" in the '864 Patent is indefinite.[5]

D. Heat Sink (Verb)

1. Claim Construction

The parties dispute the construction of the verb use of "heat sink" in the '999 Patent. GE argues that the intrinsic evidence supports construing "to heat sink" to mean "to receive and dissipate heat from." Defendants, on the other hand, argue that extrinsic evidence does not support GE's proposed construction and it renders GE's proposed construction indefinite. Specifically, Defendants argue that statements GE made to the PTO during prosecution of the '864 Patent are inconsistent with GE's proposed construction. Defendants propose, in an attempt to rectify what they believe is a conflict between GE's proposed construction and this extrinsic evidence, that the Court construe "to heat sink" to mean "to receive and dissipate heat from an object that is not being shielded or insulated." [6]

[5] GE argues that "post-*Nautilus* case law confirms the definiteness of the claims" of the '864 Patent. (GE' Post-Hearing Indefiniteness Brief at 21). In support, GE points to *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374 (Fed. Cir. 2015), the Federal Circuit's decision on remand of the Supreme Court's *Nautilus* decision. In *Biosig*, the term at issue was "spaced relationship." The Federal Circuit found that because the intrinsic evidence demonstrated that there was an upper and lower bound for this term, it was definite. As discussed above, here, the intrinsic evidence does not place upper and lower bounds on the term "elongated." GE also argues that because the Defendants were able to either admit or deny, in their 2013 Non-Infringement Contentions, whether their accused products had cores that were "elongated" or "heat sinked" an electronics module, these terms cannot be indefinite. As Defendants point out, GE overlooks the fact that the Defendants served their Non-Infringement Contentions more than a year before the Supreme Court changed the standard for indefiniteness. Whether or not the Defendants were able to understand these terms sufficiently at that time to preliminary admit or deny that their accused products infringed is not relevant to the "reasonable certainty" question currently before this Court.

[6] Initially, Defendants proposed a different construction for "to heat sink." In their Opening Claim Construction Brief, Defendants LOA, MSI and FEIT proposed that the Court construe "to heat sink" to mean "to absorb and dissipate heat from a source having a higher temperature than the heat sink's temperature." Defendant LSG proposed a different construction in its Opening Claim Construction Brief; LSG proposed that the Court construe "to heat sink" to mean "to provide for the removal of heat from." In their Reply Post-Hearing Brief on Indefiniteness,

First, the Court considers the parties' claim construction arguments. As a matter of claim construction, intrinsic evidence supports GE's proposed construction. The verb use of "heat sink" appears in only one claim in the '999 Patent:

> **Claim 8:** A light emitting apparatus comprising: …. an electronic module disposed at the second side of the heat sink and in thermal communication therewith to heat sink the electronic module….. ('999 Patent at 8: 14-16).

GE argues that because a heat sink (noun) receives and dissipates heat from another object, when an object heat sinks (verb), it receives and dissipates heat. In support, GE points to the specification. The specification explains that the heat sink receives and dissipates heat from the optics module, keeping its temperature low: "[T]he heat sinking is sufficient to maintain the optics module 12 at a 70º C. contact temperature in a 25º C. ambient." ('999 Patent at 5:63-65). The specification further explains that a heat sink "provides for removal of heat generated by the operating LEDs 16 from the LED module 20." ('999 Patent at 5:52-53). Thus, the specification of the '999 Patent supports GE's proposed construction.

Turning to the prosecution history, the Court finds that the prosecution history of the '999 Patent also supports GE's proposed construction. During prosecution of the '999 Patent, GE used language that is consistent with its proposed construction in describing the function of the heat sink. Specifically, GE stated that the heat sink "cool[s]" and "expels[s]" heat. ('999 Patent, Amendment and Remarks, dated 3/24/2004, Case No. 12-cv3131, ECF No. 37-1, Exh.16 at 11) ("the heat sink … draw[s] heat from *both* ends to cool *both* the LEDs and the electronic module and to expel that heat through the interposed radiating surface").

Defendants argue that extrinsic evidence –the prosecution history of the '864 Patent –is inconsistent with GE's proposed construction. As noted above, in the Second Office Action, the

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Defendants state that based on the April 17 Hearing they have proposed a new construction. Thus, the Court only considers claim construction arguments that Defendants have made in support of their recent proposed construction for "to heat sink" — "to receive and dissipate heat from an object that is not being shielded or insulated."

PTO rejected several of the claims in the '864 Patent application as obvious over prior art Reisenauer in view of prior art Jennings. As to Jennings, the PTO noted that Jennings "discloses a lighting device… comprising thermally conductive appendeage[s]…. extending around the core…" (Second Office Action at 6). GE disagreed, arguing that Jennings discloses a "heat radiator," not a "lighting device." (Second Amendment and Remarks at 9). GE conceded that while "Jennings does show heat-dissipating fins…these fins are not disposed around a thermally conductive core[,] [r]ather, they are disposed around the neck 11 of housing 11b." *Id.* GE then distinguished "the neck" disclosed in Jennings from the "heat sink" disclosed in the '864 Patent. For instance, GE stated that "far from being used as a heat sink, the neck 11b is intentionally shielded from receiving heat." *Id.* GE concluded that "[a]t most, Jennings discloses the basic concept of using fins to dissipate heat. It discloses nothing relating to the heat sink arrangements for lighting sources disclosed in the present application." *Id.*

Defendants argue that in light of this prosecution history, the Court should construe "to heat sink" to mean "to receive and dissipate heat from an object that is not being shielded or insulated." Defendants' argument is based on Dr. Ortega's testimony that an object will still receive some amount of heat even if it is intentionally shielded from doing so. Hrg. Tr. at 68: 17-25, 69: 1-10. This is because "there is no such thing as a perfect insulator." *Id.* According to Defendants, because an object will still receive some amount of heat even if it is intentionally shielded from doing so, when GE stated that an object that is intentionally shielded is "far from being used as a heat sink," it could not have been defining "heat sink" (verb) to mean "to receive and dissipate heat."

The problem with this argument is that the intrinsic evidence does not support Defendants' proposed construction. The claims, specification and prosecution history

demonstrates that any amount of heat transfer is sufficient for "heat sink (verb)." There is nothing in the intrinsic evidence related to "shielding" or "insulating" the heat sink. These concepts, as GE points out, come entirely from the extrinsic evidence. In construing a disputed claim term, however, courts are not permitted to rely on extrinsic evidence that is "clearly at odds with the claim construction mandated by" the intrinsic evidence. *Phillips*, 415 F.3d at 1318.

Accordingly, the Court finds that the intrinsic evidence supports GE's proposed construction. As with the term "elongated," however, this does not end the Court's inquiry. The Court must consider whether "heat sink" satisfies the definiteness requirement.

2. Indefiniteness

Defendants argue that one of ordinary skill in the art cannot discern the scope of the term "to heat sink" in the '999 Patent. The Court agrees.

During the April 17 Hearing, Dr. Feke testified that the intent of the design claimed in the '999 Patent is to have more efficient heat flow, and that an insulator would reduce and inhibit heat flow. (Hrg. Tr., 104:1-9, 15-18). However, as GE acknowledges, Hrg. Tr., 80:17-21, a component that has been shielded from a heat source (to minimize the flow of heat) will still "receive and dissipate heat." This is because, as Dr. Ortega testified, perfect insulators do not exist, which means that even if an object is insulated from a heat source it will not "reduce the heat flow completely", *i.e.*, it will still "receive and dissipate heat." (Hrg. Tr., 68: 17-25, 69: 1-10). Thus, "to heat sink," essentially has no bounds because it includes every situation in which an object receives heat from a heat source, even if the object is insulated so that it reduces the flow of heat.[7]

[7] GE argues that just because "to heat sink" covers any amount of heat transfer and is therefore broad, does not mean that this term is indefinite. In support, GE cites *SmithKline Beecham Corp. v. Apotex Corp.* 403 F.3d 1331 (Fed.

While the Court finds that the prosecution history of the '864 Patent does not support Defendants' proposed construction, it is instructive in considering Defendants' indefinite argument. As noted above, during prosecution of the '864 Patent, GE explained that a prior art component with fins was "far from being used as a heat sink [when it] is intentionally shielded from receiving heat." (Second Amendment and Remarks at 9). This statement creates ambiguity as to the scope of "to heat sink" because it suggests that "to heat sink" has at least one boundary, i.e., that "heat sinking" does not occur when an object is intentionally shielded from receiving heat. However, as discussed above, as this term is used in the '999 Patent, an object that is shielded from receiving heat is still "heat sinking."

GE argues that Defendants' use of the '864 Patent to render a term of the '999 Patent indefinite is misplaced because "to heat sink" appears in the '999 Patent, not the '864 Patent. While GE is correct that "to heat sink" only appears in the '999 Patent, the '864 Patent's prosecution history is informative to the indefinite analysis. As Defendants point out, both the '864 and '999 Patents relate to similar technology, have the same applicant, have overlapping inventors, and were prosecuted at the PTO during overlapping timeframes by the same prosecuting attorney.[8]

Accordingly, the Court finds that the verb use of "heat sink" in the '999 Patent is indefinite.

IV.

For the reasons discussed above, as to the '864 Patent, the Court adopts GE's proposed

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Cir. 2015), for the proposition that breadth of a claim is irrelevant to an indefinite analysis. Here, however, as Defendants point out, "to heat sink" is not only broad, it captures situations that are the *exact opposite* of the design claimed in the '999 Patent.

[8] GE also argues that Defendants' reliance on the prosecution history of the '864 Patent is misplaced because the '864 does not use "heat sink" as a verb. While this is true, the noun use of "heat sink" (noun) is informative as to the meaning of "to heat sink."

construction for the following terms: "core," "spreader," "surrounding," "conduit," "reflector wells," "shaped recess," "path," "selectively," and "heat sink" (noun). As for the '999 Patent, the Court adopts GE's proposed construction for the terms "heat sink" (noun), "conduit," and "second." Furthermore, the Court finds that "to heat sink" and "elongated" are indefinite and, therefore, **GRANTS** Defendants' Motion for Summary Judgment (Doc. # 46 in 12-3132).

Because, as the parties agree, either "elongated" or "heat sink" (verb) appear in all of the claims that GE alleges Defendants' products infringe, GE's patent infringement actions against the Defendants are hereby dismissed. (Hrg. Tr. at 120-121).

***/s/ DanAaronPolster* 8/5/15**
Dan Aaron Polster